

1. A method of making a paper product, comprising:

providing a paper product having a paper surface and a paper surface region treated by contact with a roughened embossing roll to form a minority of fiber to fiber bonds broken in said paper surface region to a depth less than about 0.02 mm from said paper surface, said paper product having a majority of bonds maintained substantially not broken in an interior region at a depth from said paper surface of more than about 0.02 mm.

2. A method of making a paper product as set forth in Claim 1, wherein said roughened embossing roll comprises protuberances or depressions sized at less than about 0.1 mm.

3. A method of making a paper product as set forth in Claim 1, wherein said roughened embossing roll comprises protuberances or depressions adapted to produce paper product surface deformations in said paper surface, wherein said paper product surface deformations are invisible to an unaided human eye.

4. A method of making a paper product as set forth in Claim 1, wherein said paper product further comprises decorative embossing.

5. A method of making a paper product as set forth in Claim 1, wherein said roughened embossing roll comprises pits having a depth less than about 0.1 mm.

6. A method of making a paper product as set forth in Claim 1, wherein said step of providing a paper product having a paper surface and a paper surface region treated by contact with a roughened embossing roll to form a minority of fiber to fiber bonds broken in said paper surface region to a depth less than about 0.02 mm from said paper surface forms a paper product having higher perceived softness.

7. A method of making a paper product as set forth in Claim 1, wherein said roughened embossing roll comprises channels having a depth of less than about 0.1 mm.

8. An embossing roll for treating a paper product, comprising:  
an embossing roll having a roughened surface in the form of protuberances or depressions sized to break a minority of fiber to fiber bonds in a paper surface region of a paper product, wherein said protuberances or depressions are sized at less than about 0.1 mm.

9. An embossing roll for treating a paper product as set forth in Claim 8, wherein said roughened surface comprises protuber-

ances or depressions adapted to produce paper product surface deformations in said paper product, wherein said paper product surface deformations are invisible to the unaided human eye.

10. An embossing roll for treating a paper product as set forth  
5 in Claim 8, wherein said roughened surface comprises protuberances or depressions formed by etching or laser engraving said embossing roll.

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10 11. An embossing roll for treating a paper product as set forth in Claim 8, wherein said roughened surface comprises protuberances or depressions formed by stippling.

12. An embossing roll for treating a paper product as set forth in Claim 10, wherein said embossing roll contains visible embossing areas for forming visible paper embossments separated by land areas containing said protuberances or depressions for forming  
15 invisible surface deformations in said paper product.

13. An embossing roll for treating a paper product as set forth in Claim 11, wherein said embossing roll contains visible embossing areas for forming visible paper embossments separated by land areas containing said protuberances or depressions for forming  
20 invisible surface deformations in said paper product.

14. A paper product, comprising:

a paper tissue web having a paper surface and a paper surface region treated by contact with a roughened embossing roll to form a minority of fiber to fiber bonds broken in said paper surface region to a depth less than about 0.02 mm, said paper tissue web having fiber to fiber bonds maintained substantially not broken in an interior region at a depth from said paper surface of more than about 0.02 mm.

15. A paper product as set forth in Claim 14, wherein said roughened embossing roll comprises protuberances or depressions sized at less than about 0.1 mm.

16. A paper product as set forth in Claim 14, wherein said paper product comprises paper product surface deformations are invisible to the unaided human eye formed by said roughened embossing roll protuberances or depressions.

17. A paper product as set forth in Claim 14, wherein said paper product further comprises decorative embossing.

18. A paper product as set forth in Claim 16, wherein said roughened embossing roll comprises etched protuberances or depressions having a height or depth less than about 0.1 mm.

19. A paper product as set forth in Claim 14, wherein said paper tissue web having a paper surface region treated by contact with said roughened embossing roll exhibits higher perceived softness while maintaining substantially similar levels of tensile strength.

20. A paper product as set forth in Claim 14, wherein said roughened embossing roll comprises channels having a depth of less than about 0.1 mm.